Hammerhorn Project

Botanical Biological Assessment, Biological Evaluation, and Invasive Plant Risk Assessment

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Introduction

The Hammerhorn Project encompasses approximately 11,400 acres within the footprint of the August Fire, which burned over 600,000 acres of the Mendocino National Forest from August to November 2020. The purpose of this document is to analyze the potential effects on botanical resources from implementing the proposed action. Effects to federally listed plant species, Forest Service Sensitive species, and Survey and Manage species will be considered, and the project will also be considered for its relative risk of introduction and/or spread of non-native invasive plant species.

Proposed Action

The proposed action includes roadside hazard tree abatement and salvage of fire-killed and fire-injured trees within 250 acres of the project area. Designated salvage units are in the vicinity of Hammerhorn campground, and would be located on slopes of 35 percent or less. Harvested timber would be skidded to designated landings and access roads. The salvage timber sale will include conifer species such as ponderosa pine, sugar pine, white fire, incense cedar, and Douglas-fir. Broadleaf species, including oaks, California bay laurel, bigleaf maple, willow, and white alder, would not be removed unless they pose a safety or fuels hazard. Trees will be removed from salvage units in preparation for planting.

Affected Environment

The Hamerhorn project area is comprised of 11,400 acres, and primarily of forested vegetation types. The project area ranges in elevation from approximately 2400 to 7400 ft. Mixed conifer and fir forests dominate the higher elevations, while montane hardwoods and chaparral dominate in lower elevations. The area burned patchily during the 2020 August Complex Fire, but most of the designated salvage units burned at high severity, resulting in near-complete basal area loss.

There are no mapped areas of serpentine bedrock/soils within the Hammerhorn project area.

Species Considered

According to the US Fish and Wildlife Service, possible federally listed plant species in the project area include the Endangered *Lasthenia burkei* (Burke's goldfields), *Lasthenia conjugens* (Contra Costa goldfields), and *Trifolium amoenum* (showy Indian clover).

The Regional Forester maintains a list of sensitive plant species for the Forest Service. The species for the Mendocino National Forest are listed in Table 1. Species that are also listed as Survey and Manage species are noted in the table.

Table 1: Sensitive plant species for the Mendocino National Forest

Scientific name	Common name	Habitat
Vascular Plants		
Anisocarpus scabridus	scabrid alpine tarplant	Rock outcrops and scree slopes; open, sub-alpine veg.; above 5500 ft.
Antirrhinum subcordatum	dimorphic snapdragon	Serpentine chaparral openings on Henneke soils; fine talus or shot texture decomposed mudstone / sandstone
Balsamorhiza macrolepis	big-scale balsamroot	In openings or under light brush cover in ponderosa pine, chaparral, vernally moist meadows and grasslands, and oak woodlands; sandstone, serpentine, or basalt outcrop; rocky clays of metasedimentary origin; loams of granitic origin; elev. Below 4,600 ft.
Botrychium crenulatum	scalloped moonwort	Meadows, seeps, springs, and riparian areas; most often found on the lip of creek banks or on their sides, mostly within coniferous forest habitats; strong mycorrhizal requirements
Brodiaea rosea	Indian Valley brodiaea	Grows in open, sunny spots in oak woodland at the edges of ephemeral drainages, serpentine flats, and gentle slopes in gravelly (red) gumbo clay derived from serpentine.
Calycadenia micrantha	small-flowered calycadenia	Dry, open, rocky ridges, hillsides, and talus 1600 – 5000 ft elev.; grows only in areas of low plant density, in or closely associated with exposed, very barren, rocky areas or areas of packed mineral materials.
Cypripedium fasciculatum (Also a Survey and Manage species)	clustered lady's-slipper	Douglas-fir-dominated and mixed conifer forests in the mid-late seral stands whose structure allows some light to reach the forest floor. Often on north aspect slopes and riparian areas. Below 6500 ft elev.
Cypripedium montanum (Also a Survey and Manage species)	mountain lady's-slipper	Douglas-fir, white fir, and mixed conifer forests in mid-late seral stages, as well as oak woodlands and riparian areas. Aspect is primarily northerly; moderate slopes; canopy generally 60-80%; elev below 7200 ft.
Epilobium nivium	Snow Mountain willowherb	Grows in crevices of rocky outcrops and dry talus and shaley slopes on mountain tops, typically with a southern exposure. Also found on rock outcrops down into the montane chaparral and mixed conifer type.
Eriastrum tracyi	Tracy's eriastrum	Foothill chaparral, on extremely shallow mudstone or sandstone soils; disturbed openings in chamise on serpentine.
Eriogonum nervulosum	Snow Mountain buckwheat	Barren serpentine outcrops and slopes. At higher elevations (above 5000 ft) it grows on exposed rocky flats and scree slopes or in the crevices of outcrops. On serpentine barrens it grows down to about 1,000 ft elev.
Eriogonum tripodum	tripod buckwheat	Alluvial serpentine soils in foothill and cismontane woodlands.
Harmonia stebbinsii	Stebbins' harmonia	On serpentine soils on south-facing slopes
Hesperolinon drymarioides	drymaria-like western flax	Serpentine grey pine – chaparral, northern interior cypress forest, and mixed serpentine chaparral; openings between trees and shrubs in dark red serpentine soils of the Henneke series

Scientific name	Common name	Habitat
Howellia aquatilis	water howellia	Occurs in the drawdown zone of ponds and small lakes that are shaded by vegetation and between 3000 and 5000 ft elevation
Leptosiphon nuttallii ssp. *howellii*	Mt. Tedoc leptosiphon	Commercial timber stands; Jeffrey pine, incense-cedar, Douglas-fir, and white fir at middle elevations on igneous-derived soils
Lewisia stebbinsii	Stebbins' lewisia	Dry, exposed gravelly flats in volcanic rock and rubble, adjacent to sparse Jeffrey pine / white fir forest; elev. 5200 – 6700 ft.
Lupinus antoninus	Anthony Peak lupine	Rocky outcrops and dry talus and shaley slopes on mountain tops above timber line; elev. 4000 – 7500 ft.
Ophioglossum pusillum	northern adder's tongue	Draw-down-zone of ponds; near springs in open, moist, meadows
Sidalcea hickmanii ssp. *pillsburiensis*	Lake Pillsbury checkerbloom	One known site is in chaparral and knobcone pine vegetation, near an ephemeral drainage.
Tracyina rostrata	beaked tracyina	Valley and foothill grasslands
Mosses and Lichens		
Mielichhoferia elongata	elongate copper moss	Foothill woodland habitat, on moist rocks and soil; tolerates heavy metals/serpentine; up to 3550 ft. elev.
Peltigera gowardii	veined water lichen	In small perennial and seasonal streams; grows fully submerged
Sulcaria badia	bay horsehair lichen	Grows on trees in oak and and douglas-fir woodlands
Fungi		
Tricholomopsis fulvescens	tawny tricholomopsis	On well-rotted conifer logs, low elevation, high moisture

Analysis Methodology

Within the project area, there are 250 acres of proposed salvage units. These units were surveyed for botanical resources in May and June 2021. Surveys were conducted by a Forest Service botanist and targeted both special status plant species and invasive plant species. Survey intensity varied depending on site conditions and burn severity; most of the units burned at high severity and were almost completely devoid of ground-level vegetation outside of drainages, seeps, and other wet areas. These units were surveyed at cursory intensity; survey intensity increased as visible ground level vegetation increased.

Existing Condition

Special Status Plant Species

There are no previously known occurrences of federally Threatened, Endangered, or Proposed plant species within the project area.

There are six previously known occurrences of Forest Service Sensitive species within the project area: all of *Cypripedium fasciculatum* (clustered lady's slipper). This orchid species is also a Survey and Manage plant species. These occurrences, while within the project area, are not close to any salvage unit; the nearest clustered lady's slipper occurrence is over 0.25 miles – and a creek drainage – away from the nearest project unit.

Environmental Consequences

Direct effects involve physical damage to plants or their habitat. Tree harvest and fuels reduction operations have the potential to directly affect plant species, resulting in death, altered growth, or reduced seed set through physically breaking, crushing, burning, scorching, or uprooting plants.

Indirect effects are separate from an action in either time or space. These effects, which can be beneficial or detrimental to special status species and invasive plant species, may include changes in plant community composition or availability of suitable habitat.

Current inventories of Sensitive plant species capture the impact of past human actions and natural events, and are therefore implicit within the existing conditions. Cumulative effects could occur when the direct and/or indirect effects of one of the action alternatives on a given species add incrementally to the effects of past, present, and reasonably foreseeable future actions.

Biological Assessment

According to the US Fish and Wildlife Service, possible federally listed plant species in the project area include the Endangered *Lasthenia burkei* (Burke's goldfields), *Lasthenia conjugens* (Contra Costa goldfields), and *Trifolium amoenum* (showy Indian clover).

Lasthenia burkei (Burke's goldfields) and *Lasthenia conjugens* (Contra Costa goldfields) are both small annual plants that occur in low elevation (<1500 ft) vernal pools. The distribution of both species overlaps somewhat, but the nearest occurrences of either species is in far southern Lake and Mendocino counties. There is no suitable vernal pool habitat for either goldfields species within the Hammerhorn project area, and neither species was detected during surveys. I have determined that the proposed action will have no direct, indirect, or cumulative effects on Burke's goldfields or Contra Costa goldfields.

Trifolium amoenum (showy Indian clover) is a small to medium annual plant that occurs in moist to wet soils at very low elevations (<300 ft). Its distribution centers on the San Francisco Bay Area, with the northern extent reaching to Sonoma and Napa counties. There is no suitable habitat or elevation range for showy Indian clover within the Hammerhorn project area, and the species was not detected during surveys. I have determined that the proposed action will have no direct, indirect, or cumulative effects on showy Indian clover.

Biological Evaluation and Survey and Manage Species

The species addressed in this section are listed in Table 1 above. The two Survey and Manage vascular plant species on the MNF (the orchids *Cypripedium fasciculatum*; clustered lady's-slipper and *Cypripedium montanum*; mountain lady's slipper) are also on the Sensitive list, so they will be addressed together.

Project surveys of the proposed units did not detect any Forest Service Sensitive or Survey and Manage plant species. I have therefore determined that the proposed action will not have any direct, indirect, or cumulative effects on these species.

Invasive Species Risk Assessment

The equipment used to implement this project is likely to occasionally enter and/or pass through roadside infestations of non-native invasive species, especially near Hammerhorn campground, which has numerous invasive species documented around the small lake adjacent to the campground. Project

equipment may expand existing infestations and spread seeds to other portions of the project area. The existence of some weed propagules already within the project area combined with the extensive ground disturbance caused by this project indicates a moderate risk of expansion and/or spread of existing sites. The overall invasive species risk for the proposed action is therefore **moderate**.

Standard Mitigations to Reduce Invasive Species Introduction and Transfer

Equipment operators should always thoroughly clean their equipment prior to entering the project area. Properly cleaned equipment will have no visible soil, plant parts, or seeds present. Avoid staging equipment and vehicles in infested areas. If equipment is staged in infested areas, such as one of the existing landings described above, equipment should be cleaned before moving to another part of the project area.